

# MIPP TPC

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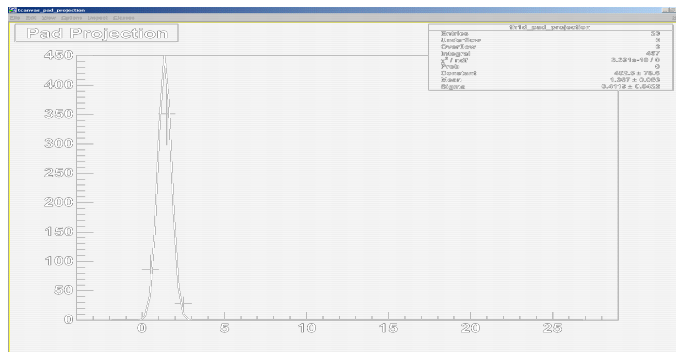
Fermilab, 22 July 2005

## TPC Cluster Fitting Why?

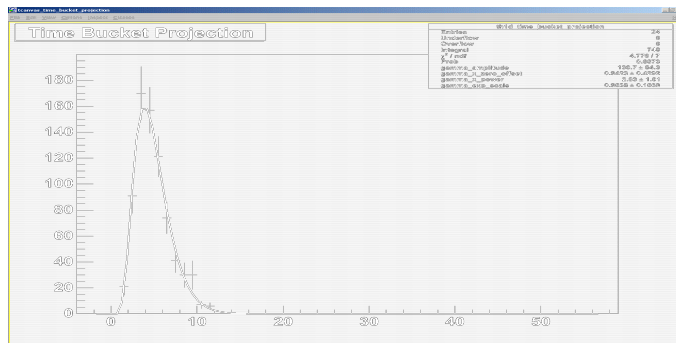
- Better cluster fitting improves  $dE/dX$  determinations, vertex finding, gain calibration and charge estimation.
- Currently we use Clusters Center of Mass.
- Appropriate fits are Gaussian (horizontal) and Gamma (Vertical).

# Fitting Successes

- Gaussian distribution over the TPC Pads.

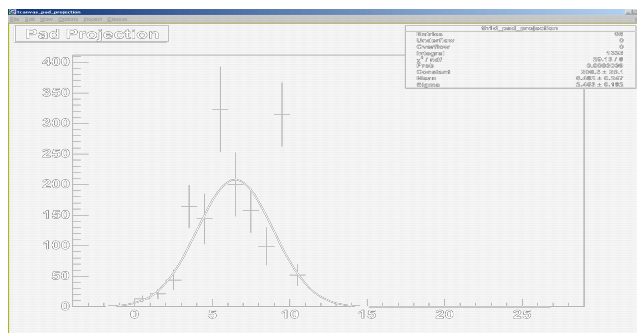


- Gamma distribution in time (height) over pads. (Amplifier shaping)

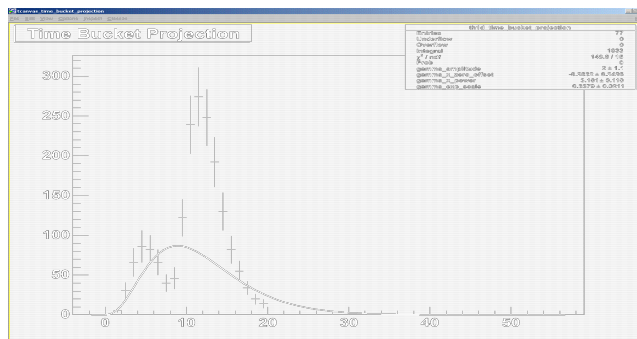


# Fitting Failures

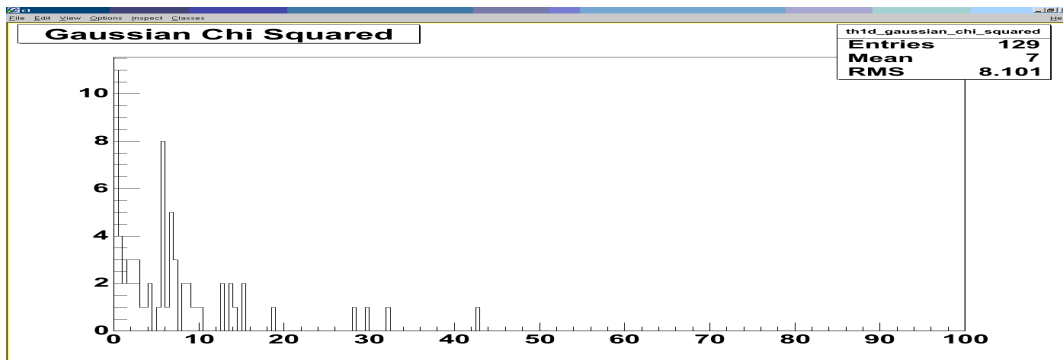
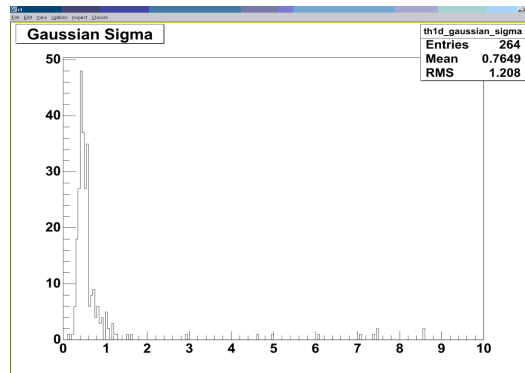
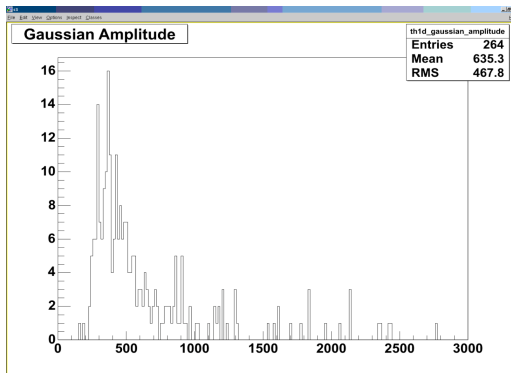
- A quick check for convoluted clusters is excessive width over pads.



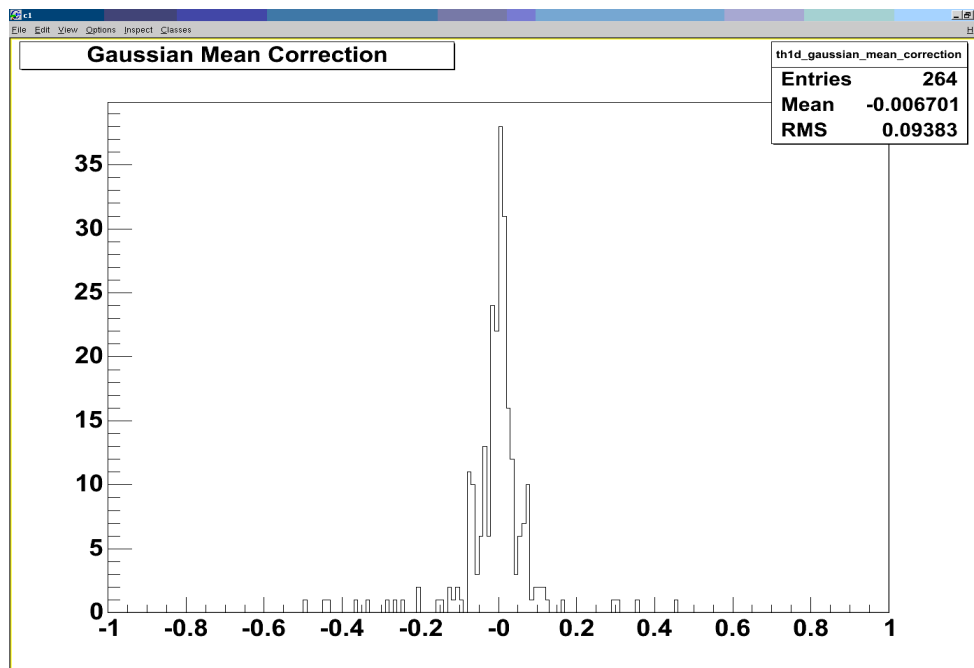
- Same check for time buckets.



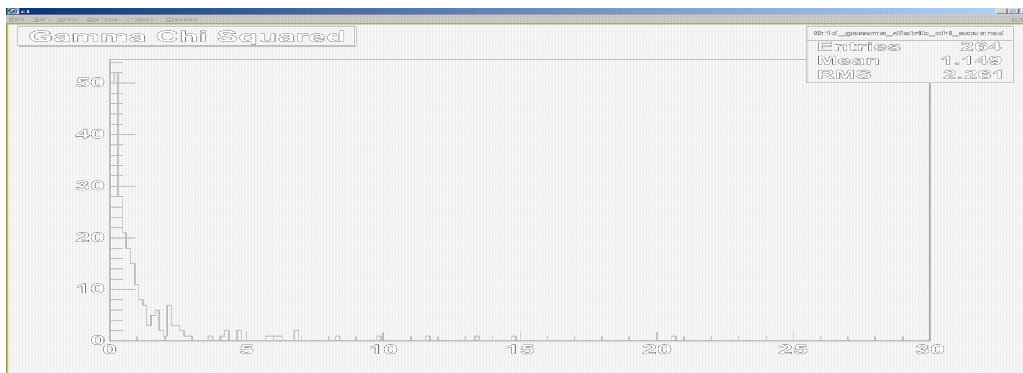
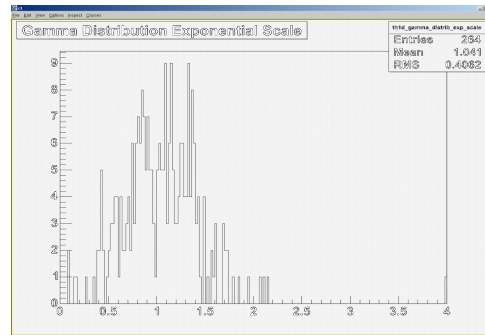
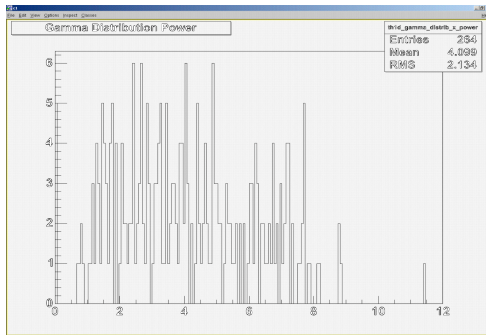
# Gaussian Fit Parameters



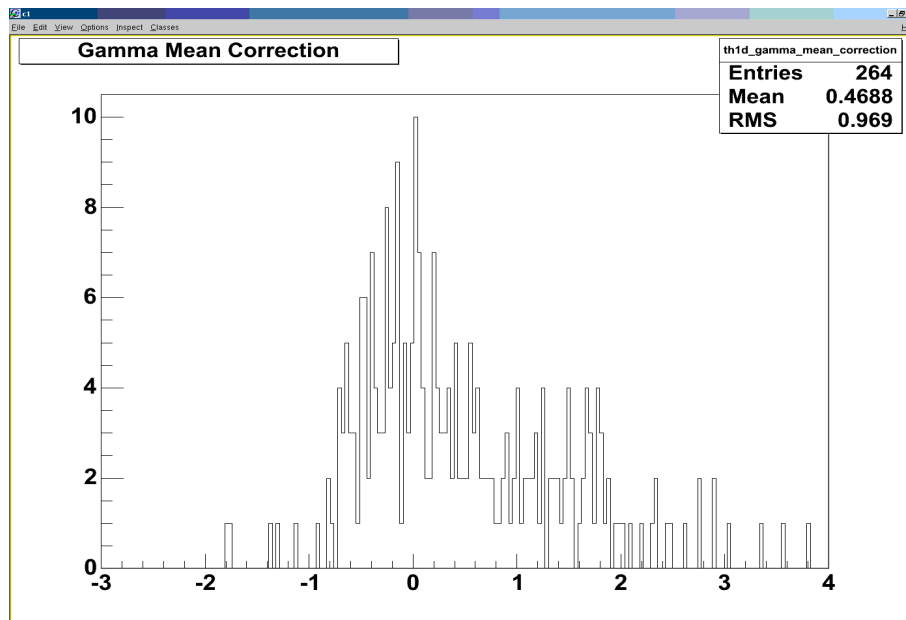
How much does this correct?



# Gamma Fit Parameters



How much does this correct?  
(Peak resolution yet to be done)



# What's Next?

- Gain needs to be folded into the error estimation.
- Studies' methods need to be reworked for general use.
  - Speed improvement.
  - General TPC Data Clusters are handled differently. Software Merge is Required.
  - Cluster pileups need to be de-convoluted.